Commonwealth of Massachusetts

Division of Marine Fisheries

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January 26, 2018

Secretary Matthew A. Beaton
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Purvi Patel, EEA No. 15787
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Secretary Beaton:

The Division of Marine Fisheries (MA DMF) has reviewed the Environmental Notification Form (ENF) by Vineyard Wind for the Vineyard Wind Connector project. The proposed cable routes would link the Vineyard Wind offshore wind array and associated cables in federal waters to the onshore Barnstable Switching Station. The two proposed cable routes, Eastern and Western Export Cable Corridors, each run between Martha's Vineyard and Nantucket through Muskeget Channel and continue north through Nantucket Sound to potential landfall sites at New Hampshire Avenue and Great Island in the Town of Yarmouth or Covell's Beach in the Town of Barnstable. The Eastern and Western Cable Corridors would run east and west of Horseshoe Shoals and traverse approximately 19 and 21 miles of state waters, respectively.

Through the "Nantucket Sound exception" included within the Magnuson Act, MA DMF exerts fisheries jurisdiction across all waters within Nantucket Sound [1]. Up to three 220 kV three-core AC transmission cables are proposed with a target burial depth of approximately three to six feet. The estimated area of impact for offshore cable installation is a six foot-wide track for each cable resulting in 1,995,840 square feet of benthic impact and an additional 2,051,676 square feet (160,800 cubic yards) of dredging impact associated with sections of the cable corridor containing sand waves. Offshore cables installation would be accomplished using jetting, jet-plow, or mechanical trenching while installation in nearshore waters bordering landfall would be accomplished using either horizontal directional drilling (HDD) or open trench methods. Existing marine fisheries resources and potential project impacts are outlined in the following paragraphs.

The waters within Nantucket Sound and adjacent state waters along the proposed cable routes traverse habitat for a variety of finfish and invertebrate species (Figures 1 and 2). The Massachusetts Ocean Plan [2] identified several areas of important fish resources based on MA DMF trawl survey data (2015 Massachusetts Ocean Plan Figure 15). In particular, commercially and recreationally important species with high abundance in this region include channeled whelk (*Busycotypus canaliculatus*), knobbed whelk (*Busycon carica*), longfin squid (*Doryteuthis pealeii*), summer flounder (*Paralichthys dentatus*), scup (*Stenotomus chrysops*), and windowpane flounder (*Scophthalmus aquosus*) (Figures 1 and 2). Of these species, summer flounder, scup, and knobbed whelk are abundant throughout Nantucket Sound while channeled whelk, longfin squid, and windowpane flounder are most abundant around the proposed Eastern Cable Corridor and further east along Nantucket Sound.

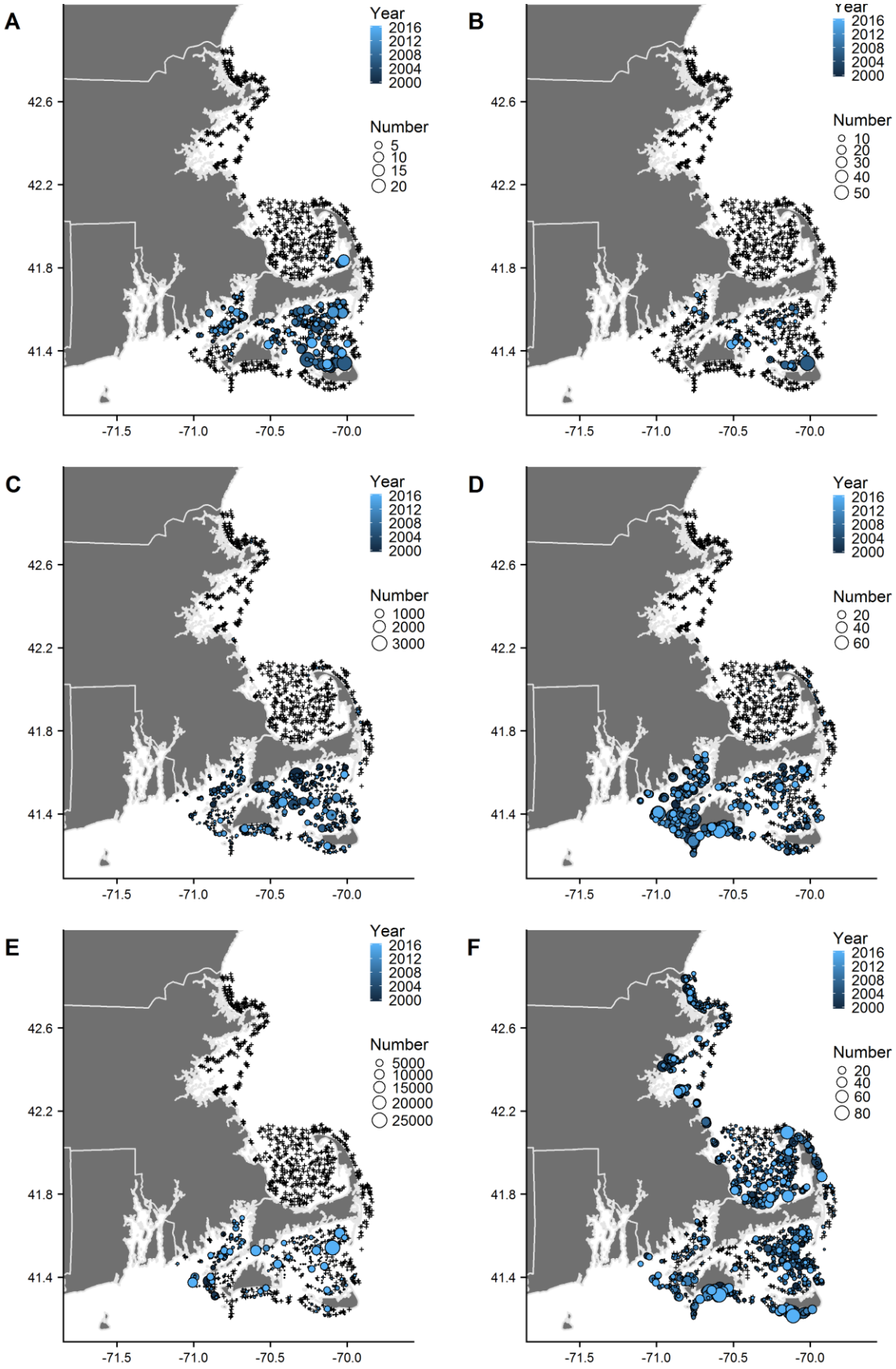

Figure 1. Abundance of select recreationally and commercially important fish and invertebrate species in Massachusetts spring bottom trawl surveys from 2000-2016. Tows for which the species of interest were absent are indicated by (+). Panels represent seasonal abundance of A) channeled whelk, B) knobbed whelk, C) longfin squid, D) summer flounder, E) scup, and F) windowpane flounder.

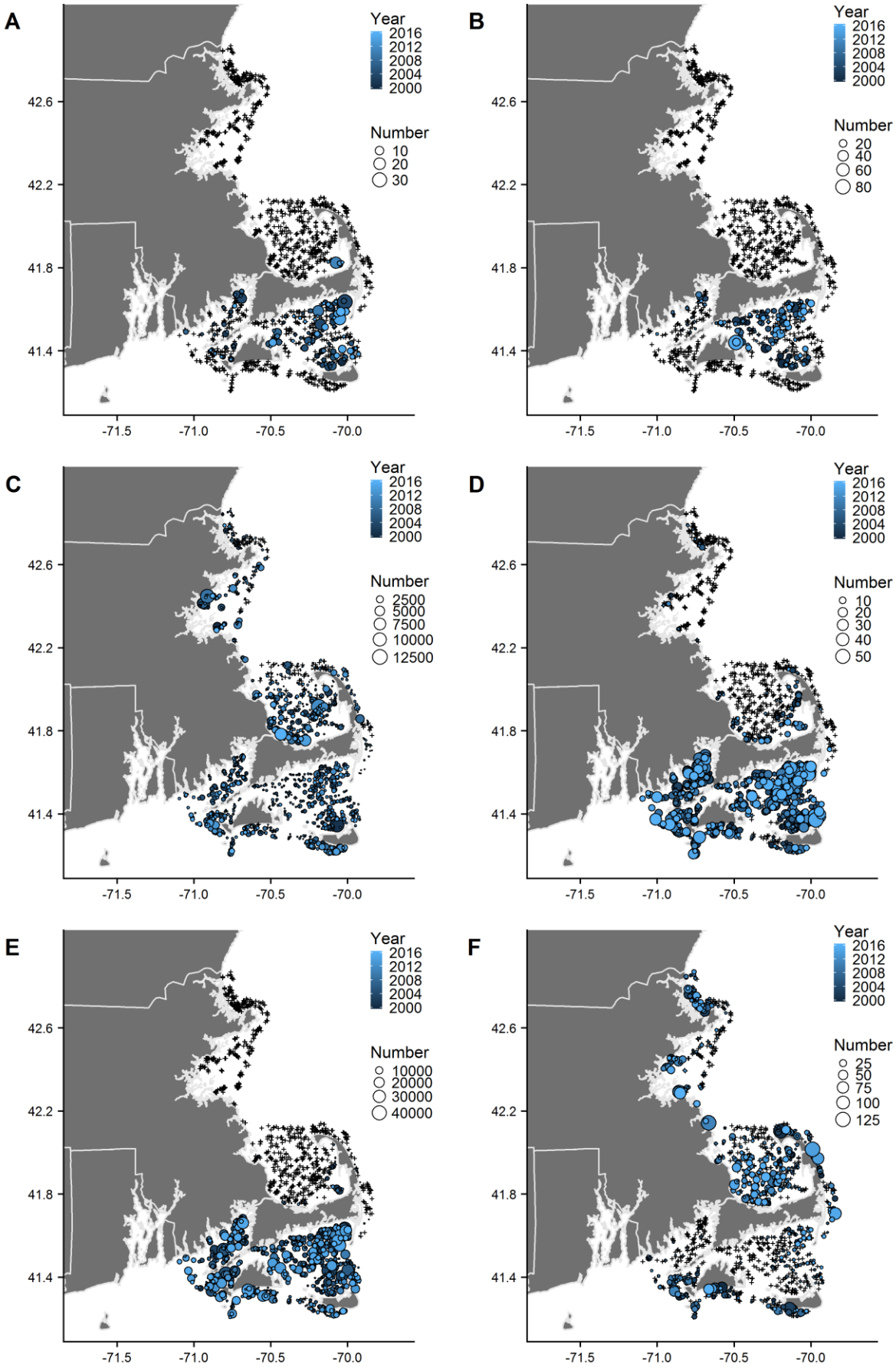

Figure 2. Abundance of select recreationally and commercially important fish and invertebrate species in Massachusetts fall bottom trawl surveys from 2000-2016. Tows for which the species of interest were absent are indicated by (+). Panels represent seasonal abundance of A) channeled whelk, B) knobbed whelk, C) longfin squid, D) summer flounder, E) scup, and F) windowpane flounder.

Of the species identified in trawl survey data, whelks and squid are particularly sensitive to benthic habitat disturbance due to limited mobility and deposition of demersal eggs, respectively. Recent stock assessments indicate that the whelk stock in Nantucket Sound is over fished, and overfishing is still occurring. The biomass index based on the DMF trawl survey has declined by over 70% since the early 1980s. Longfin squid spawn in the spring in Nantucket and Vineyard Sounds and lay demersal egg clusters (i.e., mops) with peak activity in May [3,4].

The cable route through Nantucket Sound also includes habitat for a variety of shellfish species. The offshore waters common to all proposed cable routes between Martha's Vineyard and Nantucket are mapped surf clam (*Spisula solidissima*) habitat. Additionally, the proposed Eastern Corridor would traverse or closely border sea scallop (*Argopecten irradians*) and quahog (*Mercenaria mercenaria*) habitat while the Western Corridor includes some areas of blue mussel habitat.

The various finfish and invertebrate resources along the cable corridors also support a variety of associated fisheries. The Massachusetts Ocean Plan [2] identified several areas of medium and high commercial fisheries activity and concentrated recreational fishing activity within the proposed cable routes (2015 Massachusetts Ocean Plan Figures 16 and 28). Nantucket Sound waters within and adjacent to the proposed cable routes are also classified as areas of high recreational boating density [5]. The commercial whelk fishery targets both channeled and knobbed whelk and is an important state-waters only fishery in Massachusetts that has expanded in recent years due to declines in southern New England lobster resources and increased whelk prices. The channeled whelk fishery is of particular economic importance and annually ranks among the top fifteen in terms of ex-vessel value landings in Massachusetts. Based on dealer reports, nearly two million pounds of channeled whelk were landed in 2016 with an estimated value of $4.8 million USD. Most of these landings are derived from fisheries in Nantucket Sound (Figures 3 and 4). Blue mussel (*Mytilus edulis*) and kelp (*Saccharina latissima*) aquaculture operations are also present or in the process of being permitted for deployment within Horseshoe Shoals in close proximity to the proposed cable corridors.

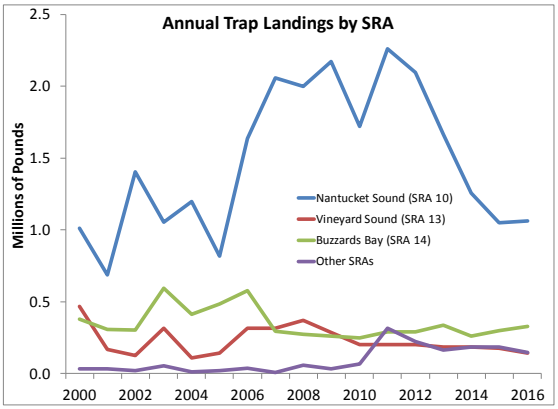

Figure 3. MA channeled whelk landings 2000 – 2016 Source: MA Commercial Catch Reports.

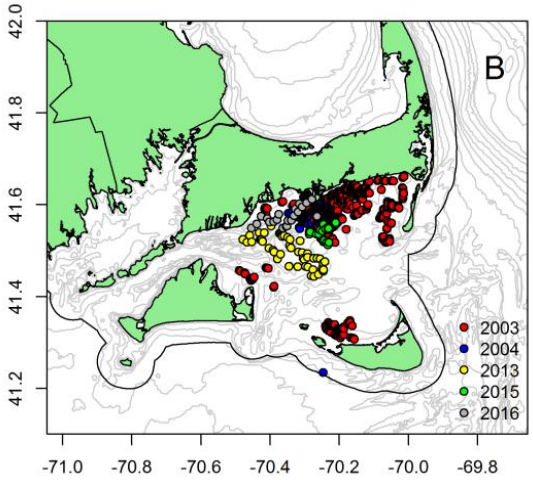

Figure 4. Locations of yearly commercial sampling effort in the Massachusetts whelk fishery, MA DMF.

Nantucket Sound is also the epicenter of the horseshoe crab (*Limulus polyphemus*) fishery for the state of Massachusetts with > 80% of landings derived from this general region (Figure 5).

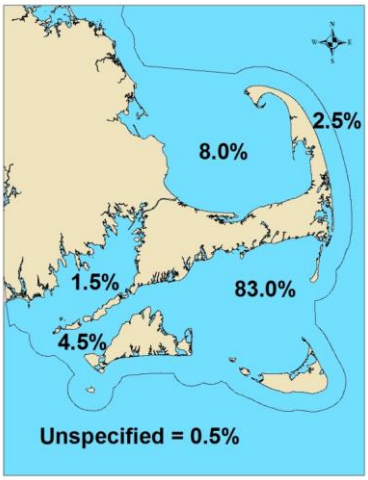

Figure 5. Landings data for the 2016 Massachusetts horseshoe crab fishery reported as percentages by region. The Nantucket Sound region accounted for 83% of state landings.

Waters within Nantucket Sound also provide habitat for a variety of whale and sea turtle species. An area of right whale (*Eubalaena glacialis*) core habitat is present south of Martha's Vineyard in close proximity to the proposed cable corridor (2015 Massachusetts Ocean Plan Figure 24, ENF Figure 1-19) while loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) sea turtles have been observed throughout Nantucket Sound [2,6].

Covell's Beach Landfall Western

Covell's Beach is mapped as a horseshoe crab nesting beach. Horseshoe crabs deposit their eggs in the upper intertidal regions of sandy beaches from late spring to early summer during spring high tides [7]. Adult crabs congregate in deep waters such as channel areas and troughs during the day while waiting to move on to the beaches at night to spawn. Adults will also overwinter in these deeper water areas. Recent stock assessments show a decline in horseshoe crab abundance in the New England region [8].

The waters offshore of the eastern and western ends of Covell's Beach have been mapped previously by the Department of Environmental Protection (DEP) as eelgrass (*Zostera marina*) meadows although the areas along the proposed cable route do not contain any mapped eelgrass habitat (Figure 6). Eelgrass beds provide one of the most productive habitats for numerous marine species [9,10] but have declined statewide in the past decade [9]. The waters offshore of the Covell's Beach alternative landfall site are also mapped surf clam habitat.

Figure 6. Waters near the Covell's Beach landfall site previously (1995-2013) mapped by DEP as eelgrass (*Zostera marina*) beds.

New Hampshire Avenue

Lewis Bay supports a variety of marine resources including winter flounder (*Pseudopleuronectes americanus*), horseshoe crabs, and shellfish. Winter flounder enter the area and spawn from January through May, laying clumps of eggs directly on the substrate. These demersal eggs hatch approximately fifteen to twenty days later. The Atlantic States Marine Fisheries Commission has designated winter flounder spawning habitat as "Habitat Areas of Particular Concern" (HAPC). A recent stock assessment has determined that Southern New England/Mid Atlantic winter flounder populations are at only 23% of the recommended recovery level [10].

The shoreline to the west of the entrance channel to Lewis Bay is a mapped horseshoe crab spawning beach. The waters bordering both the eastern and western edge of the Lewis Bay entrance channel also contains historically mapped eelgrass habitat (Figure 7). Several sections of Lewis Bay shoreline are mapped soft shell clam (*Mya arenaria*) and American oyster (*Crassostrea virginica*) habitat, and oyster aquaculture grants are present along the eastern shoreline. Most of Lewis Bay waters are identified as bay scallop habitat, and these waters also support a seasonal bay scallop fishery from October to April. Much of the Lewis Bay shoreline, including the proposed landfall area, is mapped quahog habitat. Waters near the landfall site are also used as a quahog relay area for contaminated shellfish transplanted from Mount Hope Bay.

Great Island

The waters off the Great Island landfall site contain mapped eelgrass habitat (Figure 7). This barrier beach is also identified as a horseshoe crab spawning beach.

Figure 7. Waters near the New Hampshire Avenue and Great Island landfall sites previously (1995-2013) mapped by DEP as eelgrass (*Zostera marina*) beds.

DMF offers the following comments for your consideration:

- The proposed cable routes are actively used by a variety of stakeholders. Cable laying activities may conflict with many of these existing activities, and the cables themselves could present additional conflicts if not buried to a sufficient depth or if any sort of surface armoring methods are employed.
    - DMF encourages the proponent to coordinate with the Massachusetts Lobstermen's Association (MLA) to minimize conflicts during surveying and cable installation activities.
    - Cable installation and, depending on installation depth and/or use of armoring, cable structures could affect commercial surf clam fisheries in Nantucket Sound. DMF also recommends coordination with this user group to avoid or at least minimize conflicts.

    - The DMF bottom trawl survey operates throughout Nantucket Sound annually during spring and fall. Coordination with DMF is also recommended to ensure lack of direct conflict with this survey during survey activities and cable installation.
    - Communication with the New England Fisheries Management Council is highly recommended.
    - Potential prohibition or relocation of fishing (fixed or mobile gear) for any length of time as a result of survey, installation, or repair procedures should be described and compared across alternate cable routes. The whelk fishery has a seasonal closure from December 15 to April 14. Work within this time period would avoid gear conflicts, but could pose a conflict with right whale activity in this area.
- The ENF notes that cable installation may require concrete mattresses or placement of a layer of rock to protect the cable. The DEIR should provide more detail on the anticipated need for armoring (both proposed methods and locations, if any). DMF recommends avoidance of armoring through cable corridor realignment as needed since armoring would result in habitat conversion and potential user conflicts. The DEIR should also describe the likelihood of concrete mattresses or rock material affecting fishing activities.
- Dredging and cable trenching will likely impact existing marine resources that are sessile or with limited mobility (e.g., shellfish, whelks, squid eggs).
    - Whelks are particularly susceptible to dredging and trenching impacts year-round due to several life history characteristics. Adult movements are limited to small seasonal migrations (km-scale), demersal egg cases are anchored to sandy substrates for a nine month period beginning between July and September, and juveniles that hatch in April and May recruit directly to the surrounding benthic habitats with no larval phase. These juveniles remain buried in the sediment for the first three years post-hatching. Given limited movements at all life stages, whelks are highly susceptible to localized depletion from physical disturbances like dredging. Since whelks are vulnerable to disturbance during all months, impact minimization would require relocating existing individuals outside of the area of impact prior to construction.
    - Longfin squid vulnerability will be greatest during the peak spawning months. Avoidance of dredging and trenching during this time (**April 15 to June 15**) would minimize impacts to this species.
    - The ENF states that cable installation "may result in some temporary impacts to shellfish in the area immediately along the installation path. Post-construction shellfish monitoring would be performed to ensure the shellfish habitat will return substantially to its pre-installation condition." The DEIR should provide further details on proposed shellfish monitoring as well as contingency plans if the sediment profile does not return to pre-construction conditions. Like whelk resources, minimization of impacts of dredging disturbance on surf clams and other shellfish would require relocation prior to construction.
    - The project timeline should consider optimal times of year to minimize impacts to marine resources, and include consideration of collection and relocation programs for whelk and/or surf clams.
- DMF recommends that the proponent develop a comprehensive contingency plan in the DEIR outlining response protocol for a frac out event for the horizontal directional drilling (HDD) alternative for nearshore installation. Plans should include how frac outs will be avoided, as well as actual response and containment plans.
- In the DEIR, information relative to impacts to fisheries resources as a result of similar cables installed elsewhere, including Nantucket Sound, would be useful. Of particular concern is the effect of AC heat and electromagnetic fields on fisheries resources including prey species such as sand lance (*Ammodytes* spp.) and benthic invertebrates.

- The DEIR should include detailed descriptions of the existing benthic habitat. Surveys of sediment type and benthic invertebrates should be conducted and included in the DEIR to weigh the alternatives; benthic shear stress and bathymetry are also important variables when describing benthic habitats.
- Through the Ocean Plan, the Commonwealth established a standard substrate map. We would like to see that the data produced by this effort be compatible with that substrate map, since it underlies the interpretation of hard/complex seafloor. Toward that end, substrate analyses from project survey work should be produced in the same Excel spreadsheet as the Commonwealth's substrate data. The data are available on MORIS and at the National Geophysical Data Center (http://www.ngdc.noaa.gov/mgg/geology/g10164/).
- All data should be provided digitally in formats compatible with ArcGIS to enable comparison with existing datasets. Acoustic mosaics should be provided as geotiffs at the maximum resolution possible. There should be at least four geotiffs provided: multibeam backscatter, sidescan sonar backscatter, multibeam bathymetry, and backscatter draped on bathymetry. Backscatter mosaics should be groundtruthed using the video and vibracoring surveys to create an interpreted substrate map using the Wentworth grain size scale and the same modified-Folk classification used by CZM to create the hard/complex seafloor map. Relevant biological features should also be identified (e.g., eelgrass). The video contact sheets with hyperlinks should also be provided digitally. These files should be available to all reviewers.
- *Lewis Bay*
    - If the identified preferred landfall site at New Hampshire Avenue is ultimately selected, timing of work within Lewis Bay should be staged to avoid sensitive life history stages of existing marine resources as well as fisheries associated with such species. To protect the spawning period, larval settlement and juvenile development of winter flounder as well as adult horseshoe crabs staging to spawn, DMF recommends a time of year (TOY) restriction on all in-water work within Lewis Bay of **January 15 to June 30**. Additional TOYs may be required to protect shellfish spawning and settlement within Lewis Bay. Combined shellfish TOYs covering all identified species would extend the TOY restriction for the Lewis Bay portion of the project to September 30 to protect bay scallops from spawning through larval settlement phases [3].
    - Work within Lewis Bay should be staged to avoid and maintain a minimum 75 foot buffer from any identified eelgrass. The ENF does not show any eelgrass along the proposed cable route based upon most recent DEP mapping, but in-water surveys are necessary to ground truth the aerial survey data and to more precisely delineate existing eelgrass distribution at a finer scale. For example, historical (1995) DEP mapping identified eelgrass east of the entrance channel within the proposed cable route warranting more specific in-water surveys.
    - Open trench is listed as the preferred alternative over HDD for the New Hampshire Avenue landfall while HDD is proposed for the Covell's Beach and Great Island landfall sites. HDD is proposed for the latter sites as a means of avoiding sensitive resources or recreational interests. Given the extensive marine resources within Lewis Bay (e.g., winter flounder, shellfish (wild, aquaculture grants, and relay)), the DEIR should further consider HDD as an alternative for this landfall site.
    - DMF also recommends that the proponent coordinate with the town shellfish constable and aquaculture grant owners to ensure that cable installation activities do not interfere with shellfish relay or aquaculture operations.
    - Shellfish surveys should be conducted along the cable route both pre- and post-installation if this site is selected for landfall. Survey methods should be developed in coordination with the shellfish constable and DMF.

- *Covell's Beach*
    - If Covell's Beach is selected for cable landfall, work in the nearshore area on the shoreline should avoid the horseshoe crab spawning season to protect adults staging to spawn as well as eggs, larvae and newly settled juveniles. This TOY restriction period extends from **May 1 to July 31** [3].
    - As areas near the proposed cable route have been previously mapped by DEP as eelgrass meadows, in-water surveys should also be conducted for the nearshore waters.
- Great Island
    - Given identification of eelgrass meadows by recent DEP mapping in nearshore waters within the proposed cable route, in-water eelgrass surveys should also be performed for the nearshore portion of this proposed landfall route.
- The DEIR should include eelgrass survey data and methods. We recommend reviewing eelgrass survey methodology with DMF prior to conducting any surveys. Eelgrass surveys should follow the guidance in DMF TR-43, "Technical Guidelines for the Delineation, Restoration, and Monitoring of Eelgrass in Massachusetts Coastal Waters" [11].

Questions regarding this review may be directed to John Logan at our New Bedford office at (508) 990-2860 ext. 141.

I note one final point relevant to communication with the fishing industry about Vineyard Wind Plans. I've been informed that the Cape meeting was fairly contentious with fishermen being dissatisfied with the Vineyard Wind fisheries liaison especially regarding communication and forewarning of the project's permitting. I cannot speak to the truth of this matter; however, as this project progresses Vineyard Wind should be encouraged to evaluate the liaison's performance and make corrections if warranted. Vineyard Wind has recognized the importance of communication; therefore, if something is not working as planned, changes should be made.

Sincerely yours,

David E. Pierce, PhD
Director

cc: Yarmouth Conservation Commission
Barnstable Conservation Commission
Holly Carlson Johnston, Epsilon Associates, Inc.
Conrad Caia, Yarmouth Shellfish Constable
Dan Horn, Barnstable Shellfish Constable
Christopher Boelke, Sue Tuxbury & Alison Verkade, NMFS
Robert Boeri, CZM
Ed Reiner, EPA
Derek Standish, David Wong, DEP
Richard Lehan, DFG
Kathryn Ford, Terry O'Neil, Tom Shields, Kelly Whitmore, Pooja Potti, DMF

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